Climate Change and Human Health Literature Portal

National Institute of
Environmental Health Sciences

Air temperature-related human health outcomes: Current impact and estimations of future risks in Central Italy

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Abstract:

The association between air temperature and human health is described in detail in a large amount of literature. However, scientific publications estimating how climate change will affect the population's health are much less extensive. In this study current evaluations and future predictions of the impact of temperature on human health in different geographical areas have been carried out. Non-accidental mortality and hospitalizations, and daily average air temperatures have been obtained for the 1999-2008 period for the ten main cities in Tuscany (Central Italy). High-resolution city-specific climatologic A1B scenarios centered on 2020 and 2040 have been assessed. Generalized additive and distributed lag models have been used to identify the relationships between temperature and health outcomes stratified by age: general adults (/Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)75). The cumulative impact (over a lag-period of 30 days) of the effects of cold and especially heat, was mainly significant for mortality in the very elderly, with a higher impact on coastal plain than inland cities: 1 degrees C decrease/increase in temperature below/above the threshold was associated with a 2.27% (95% CI: 0.17-4.93) and 15.97% (95% CI: 7.43-24.51) change in mortality respectively in the coastal plain cities. A slight unexpected increase in short-term cold-related mortality in the very elderly, with respect to the baseline period, is predicted for the following years in half of the cities considered. Most cities also showed an extensive predicted increase in short-term heat-related mortality and a general increase in the annual temperature-related elderly mortality rate. These findings should encourage efforts to implement adaptation actions conducive to policy-making decisions, especially for planning short- and long-term health intervention strategies and mitigation aimed at preventing and minimizing the consequences of climate change on human health.

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Resource Description

Climate Scenario : ⊠

specification of climate scenario (set of assumptions about future states related to climate)

 Special Report on Emissions Scenarios (SRES)

   Special Report on Emissions Scenarios (SRES) Scenario: SRES A1

Exposure : ⊠

weather or climate related pathway by which climate change affects health

 Temperature

Temperature: Fluctuations

Geographic Feature: ⊠

resource focuses on specific type of geography

 Urban, Other Geographical Feature

Other Geographical Feature : Coastal Plains; inland hills

Geographic Location: ⊠

resource focuses on specific location

 Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Italy

Health Impact: ⊠

specification of health effect or disease related to climate change exposure

 Morbidity/Mortality

Mitigation/Adaptation: ⊠

mitigation or adaptation strategy is a focus of resource

 Adaptation, Mitigation

Model/Methodology: ⊠

type of model used or methodology development is a focus of resource

 Outcome Change Prediction

Population of Concern: A focus of content

Population of Concern: ⊠

populations at particular risk or vulnerability to climate change impacts

 Elderly

Resource Type: ⊠

format or standard characteristic of resource

 Research Article

Timescale: ⊠

time period studied

Medium-Term (10-50 years)

Vulnerability/Impact Assessment: ☒

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content